Copies of the fragments unrolled by Sir Humphry Davy,—being fac-similes of the original imitations, executed by Sir William Gell,—are annexed to this communication.

Observations on Naphthaline, a peculiar Substance resembling a Concrete Essential Oil, which is apparently produced during the Decomposition of Coal Tar, by Exposure to a Red Heat. By J. Kidd, *M.D. Professor of Chemistry, Oxford. Communicated by* W. H. Wollaston, *M.D. F.R.S.* Read March 8, 1821. [*Phil. Trans.* 1821, *p.* 209.]

By passing coal tar through a red-hot iron tube, a portion of an aqueous fluid, and of a substance like tar, was obtained; the latter is black, soluble in ether, and partially in alcohol, of an aromatic odour, and sweetish taste. It was submitted to slow distillation, and among other products afforded naphthaline, a white concrete substance of an aromatic odour and taste, fusible at 180°, and scarcely soluble in water, but readily so in ether, alcohol, and oils.

Of the various characters of this substance, detailed by the author, its tendency to crystallize appears the most remarkable; its vapour condenses in rhombic plates, which are sometimes modified into hexagonal plates, by the incomplete development of the smaller angles of the usual rhomb.

The other substances obtained along with the naphthaline were ammoniacal water, and an oil of a bituminous and aromatic odour, boiling at 210°, and not congealing at 32°, highly inflammable, and readily soluble in alcohol and ether: there was also produced, during the latter part of the distillation, a yellow farina precipitable from its alcoholic solution by water, and fusible. Of these four substances, resulting from the distillation of the black liquid obtained by distilling coal tar, Dr. Kidd thinks that the water and the farina are products, and the other mere educts of the operation.

On the Aberrations of Compound Lenses and Object-Glasses. By J. F. W. Herschel, *Esq. F.R.S. &c.* Read March 22, 1821. [*Phil. Trans.* 1821, *p.* 222.]

To those mathematicians who have investigated the theory of the refracting telescope, it has often, says Mr. Herschel, been objected, that little practical benefit has resulted from their speculations. Although the simplest considerations suffice for correcting that part of the aberration which arises from the different refrangibility of the different coloured rays, yet in the more difficult part of the theory of optical instruments which relates to the correction of the spherical aberration, the necessity of algebraic investigation has always been acknowledged; although, however, the subject is confessedly within its reach, a variety of causes have interfered with its successful prosecution, and the best artists are content to work their glasses by empirical rules. In the investigations detailed in this paper, the